

What is claimed is:-

1. An isolating power supply for electrical equipment, comprising a transformer having an input for a mains alternating current (AC) power supply, a rectifier by which the output of the transformer can be rectified, a primary energy storage device for electrically smoothing the output of the rectifier, a switching device which is electrically connected to the output of the primary energy storage device and which can be switched between a conducting state and a non-conducting state, and a secondary energy storage device which is electrically connected to the switching device, and means for producing a switching device control signal so that in use when the switching device is in a non-conducting state the primary energy storage device stores the output from the rectifier and the secondary energy storage device is electrically isolated from the primary energy storage device and supplies an electrical output to associated electrical equipment, and when the rectifier is no longer charging the primary energy storage device the switching device is in a conducting state so that the primary and secondary energy storage devices are electrically connected and the secondary energy storage device stores the output from the primary energy storage device.

2. An isolating power supply as claimed in claim 1, wherein the switching device is a semiconductor switching device.

3. An isolating power supply as claimed in claim 2, wherein the semiconductor switching device is electrically connected to the control signal via an opto-isolator.

4. An isolating power supply as claimed in claim 1, wherein the control signal is  $180^{\circ}$  out of phase with the mains AC power supply.
5. An isolating power supply as claimed in claim 1, wherein the control signal has a square waveform.
6. An isolating power supply as claimed in claim 2, wherein the switching device is a metal oxide semiconductor field-effect transistor (MOSFET).
7. An isolating power supply as claimed in claim 1, wherein the primary energy storage device is a capacitor.
8. An isolating power supply as claimed in claim 1, wherein the primary energy storage device is an inductor.
9. An isolating power supply as claimed in claim 1, wherein the secondary energy storage device is a capacitor.
10. An isolating power supply as claimed in claim 1, wherein the secondary energy storage device is an inductor.
11. An isolating power supply as claimed in claim 1, wherein a plurality of primary energy storage devices are provided.

12. An isolating power supply as claimed in claim 1, wherein a plurality of secondary energy storage devices are provided.

13. An isolating power supply as claimed in claim 1, wherein the rectifier is a bridge rectifier.